Contents

Preface vii

History of fast reactor fuel development, *J.H. Kittel, B.R.T. Frost, J.P. Mustelier, K.Q. Bagley, G.C. Crittenden and J. Van Dievoet* 1

Status of liquid metal fast breeder reactor fuel development in Japan, *M. Katsuragawa, H. Kashihara and M. Akebi* 14

Status of LMR fuel development in the United States of America, *R.D. Leggett and L.C. Walters* 23

Status of LMR fuel development in Europe, *C. Brown, A. Languille and G. Muehling* 33

Fuel fabrication processes, design and experimental conditions for the joint US–Swiss mixed carbide test in FFTF (AC-3 test), *R.W. Stratton, G. Ledergerber, F. Ingold, T.W. Latimer and K.M. Chidester* 39

Casting of metallic fuel containing minor actinide additions, *C.L. Trybus, J.E. Sanecki and S.P. Henslee* .. 50

Development of new ferritic steels as cladding material for metallic fuel fast breeder reactor, *M. Tokiwai, M. Horie, K. Kako and M. Fujiwara* 56

Alloying design of oxide dispersion strengthened ferritic steel for long life FBRs core materials, *S. Ukai, M. Harada, H. Okada, M. Inoue, S. Nomura, S. Shikakura, K. Asabe, T. Nishida and M. Fujiwara* 65

Tube manufacturing and mechanical properties of oxide dispersion strengthened ferritic steel, *S. Ukai, M. Harada, H. Okada, M. Inoue, S. Nomura, S. Shikakura, T. Nishida, M. Fujiwara and K. Asabe* .. 74

Modelling of fission gas spatial distribution in single grains of UO_2 fuel, *V.F. Chkuaseli* 81

Melting temperature and thermal conductivity of irradiated mixed oxide fuel, *K. Yamamoto, T. Hirosawa, K. Yoshikawa, K. Morozumi and S. Nomura* . 85

Vibrocompacted fuel for the liquid metal reactor BOR-60, *R. Herbig, K. Rudolph, B. Lindau, O.V. Skiba and A.A. Maershin* 93

Evaluation of driver fuel performance in the Joyo Mk-II core, *T. Asaga, S. Shikakura, S. Iwanaga, S. Nomura, I. Shibahara and M. Katsuragawa* 102

Status of fuel, blanket, and absorber testing in the fast flux test facility, *R.B. Baker, F.E. Bard, R.D. Leggett and A.L. Pitner* 109

Experience with advanced driver fuels in EBR-II, *C.E. Lahm, J.F. Koenig, R.G. Pahl, D.L. Porter and D.C. Crawford* 119

Metal fuel test program in the FFTF, *A.L. Pitner and R.B. Baker* 124

Irradiation performance of modified 316 stainless steel for Monju fuel, *I. Shibahara, S. Ukai, S. Onose and S. Shikakura* 131

Performance of HT9 clad metallic fuel at high temperature, *R.G. Pahl, C.E. Lahm and S.L. Hayes* 141

Irradiation behavior of advanced mixed-oxide fuel pins in EBR-II, *A. Boltax, H.D. Garkisch, K. Hirai and T. Mitsugi* 148

Performance of U–Pu–Zr fuel cast into zirconium molds, *D.C. Crawford, C.E. Lahm, H. Tsai and R.G. Pahl* 157

Interdiffusion of cerium in Fe-base alloys with Ni or Cr, *P.C. Tortorici and M.A. Dayananda* 165

Chemical modelling in the TRAFIC code, *M.A. Mignanelli and R. Thetford* 173

The development of the Enpanne code to model failed fast reactor fuel pins, *I.J. Ford and M.A. Mignanelli* 180

Fuel modeling at high burn-up: recent development of the GERMINAL code, *J.-C. Melis, J.-P. Piron and L. Roche* 188

Behavior of EBR-II Mk-V-type fuel elements in simulated loss-of-flow tests, *Y.Y. Liu, H. Tsai, M.C. Billone, J.W. Holland and J.M. Kramer* 194

Modeling the behavior of metallic fast reactor fuels during extended transients, *J.M. Kramer, Y.Y. Liu, M.C. Billone and H.C. Tsai* 203

Highly irradiated fuel behaviour up to melting: JOG tests in CABRI, *J.-C. Melis, H. Plitz and R. Thetford* 212

Behavior of mixed-oxide fuel elements during an overpower transient, *H. Tsai, L.A. Neimark, T. Asaga and S. Shikakura* 217

Evaluation of the power-to-melt experiments POTOM, *D. Freund, D. Geithoff and H. Steiner* 228

Experience with failed LMR oxide fuel element performance in European fast reactors, *H. Plitz, G.C. Crittenden and A. Languille* 238

Fuel/cladding compatibility in U–19Pu–10Zr/HT9-clad fuel at elevated temperatures, *A.B. Cohen, H. Tsai and L.A. Neimark* 244

Fuel-sodium reaction product and its influence on breached mixed-oxide fuel pins, *R.V. Strain, J.H. Bottcher, S. Ukai and Y. Arii* 252

Author index 261

Subject index 264